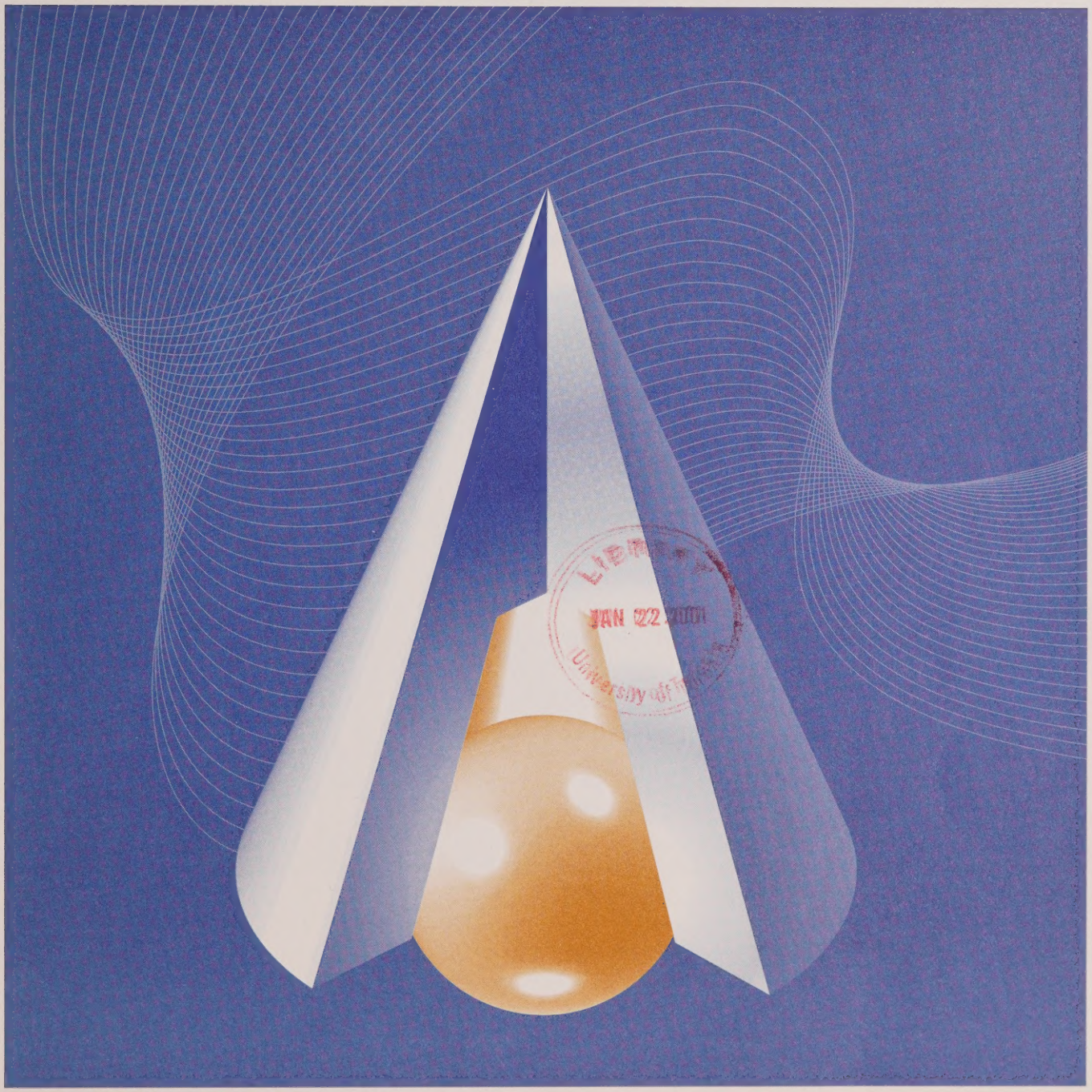
Research Paper Series

Analytical Studies Branch

The Impact of International Trade on the Wages of Canadians

by Omar Zakhilwal

No. 156



Statistics Canada Statistique Canada

Canada

ANALYTICAL STUDIES BRANCH
RESEARCH PAPER SERIES

The Analytical Studies Branch Research Paper Series provides for the circulation, on a pre-publication basis, of research conducted by Branch staff, visiting Fellows and academic associates. The Research Paper Series is intended to stimulate discussion on a variety of topics including labour, business firm dynamics, pensions, agriculture, mortality, language, immigration, statistical computing and simulation. Readers of the series are encouraged to contact the authors with comments, criticisms and suggestions. A list of titles appears inside the back cover of this paper.

Papers in the series are distributed to Statistics Canada Regional Offices, provincial statistical focal points, research institutes, and speciality libraries. These papers can be downloaded from the internet at *www.statcan.ca*.

To obtain a collection of abstracts of the papers in the series and/or copies of individual papers (in French or English), please contact:

Publications Review Committee
Analytical Studies Branch, Statistics Canada
24th Floor, R.H. Coats Building
Ottawa, Ontario, K1A 0T6
(613) 951-6325

The Impact of International Trade on the Wages of Canadians

by

Omar Zakhilwal

No. 156

11F0019MPE No. 156
ISSN: 1200-5223
ISBN: 0-660-18339-0

Price: $5.00 per issue, $25.00 annually

Family and Labour Studies
24-G. R.H. Coats Building, Ottawa, K1A 0T6
Statistics Canada (613) 951-9047
Facsimile Number (613) 951-5403

December 2000

This paper is drawn from my ongoing PhD research. First and foremost my thanks go to my thesis supervisor, Professor Vivik Dehejia for his ongoing help and support, and then to Miles Corak for making it possible for me to use the SLID confidential data files for my research under the terms of a Statistics Canada Research Stipend. My thanks also go to Dr. John Baldwin for providing me with some crucial data and Dr. Wulong Gu and Dr. Ram Acharya for some useful comments.

Aussi disponible en français

Table of Contents

Abstract

Developments in the relative wages of more and less educated workers during the early 1990s are examined using the Survey of Labour and Income Dynamics. Particular attention is paid to the role of international trade in determining the wage differential between workers with post-secondary certification and those without. It is shown that in the absence of the relatively greater growth in the supply of more educated workers, the gap between the wages of more and less educated workers would have increased. After controlling for some of the most likely influences on real wages it is found that international trade has a significant positive impact on the wages of both more and less educated workers. However, the impact on the more highly educated seems to be some four times stronger, roughly the same as the impact of technological change.

JEL Classification: F17, J31, O3

Key Words: International trade, returns to education, skilled-unskilled wage differentials.

1. Introduction

Developments in the relative wages of more and less educated workers during the early 1990s are studied in this paper, with particular attention being paid to the impact of international trade. The experiences of workers with post-secondary certification are contrasted with the experiences of those without. There is a consensus in the United States that the differential between these two groups has been widening in favour of educated workers over the 1980s and 1990s, but there is still dispute over this issue in Canada. For example, while Baldwin and Rafiquzzaman (1998) show a widening of education differential, Freeman and Needels (1991) argue that the rise is next to nil, and Murphy, Riddell and Romer (1998) present evidence for a declining education premium over the same period. Nevertheless, Freeman and Needels (1991) and Murphy, Riddell and Romer (1998) admit that the education premium would have increased significantly were it not for a greater growth in the supply of the more educated labour.

In fact, I find this to in part be the case. After correcting for changes in labour supply, the wage differential between more and less educated workers would indeed have been on an upward trend. Moreover, the finding of no increase or even a decrease in the wage premium to higher education cannot be counted as evidence against the hypothesis that trade liberalization is leading to wider disparities in wages. It could just be that the downward influence on wages caused by the growth in labour supply is greater than the upward influence caused by changes on the demand side due to trade. After holding a number of the most likely factors influencing real wages constant, I find that international trade has a significant positive impact on the wages of both more educated and less educated workers, but also that the impact on the more educated seems to be some four times stronger (roughly the same as the impact of technological change).

The paper is structured as follows: in Section 2 I introduce and discuss the data sources; in section 3 I summarize some key statistics and offer a descriptive analysis; in Section 4 I discuss the existence and nature of the wage premium to higher education in Canada; and finally in Section 5 I examine econometrically the relationship between this wage premium and international trade.

2. Data Sources

The data come from the person file of the Survey of Labour and Income Dynamics (SLID). The SLID is a longitudinal survey conducted by Statistics Canada that follows individuals and families across Canada, collecting information on their labour market experiences as well as income and family circumstances. It is also designed to offer representative cross-sectional estimates of the population. My analysis uses this information from 1993 to 1996, on about 31,000 persons aged 16 and over.

The provision of information on the same person through time and the measurement of changes experienced by that person is a distinguishing feature of the SLID data. By controlling for individual specific effects and by recording changes in the labour market status of the respondents this survey makes possible analyses of the causes of change in the labour market status of Canadians.

I restrict the sample to individuals between the ages of 18 and 64, and also exclude workers who are self-employed and those working without pay. Workers with a real wage rate above $100 and

below $4 an hour in 1992 dollars are considered to be outliers and are also excluded. Weighted data are used throughout the analysis.

The only industry level information provided by the SLID is a code indicating the industry of employment of each job holder: specific characteristics, in particular the degree of openness to international trade or technology use, are not provided. This information is central to the issues being addressed. The master SLID file does provide relatively detailed industry codes—three digit Standard Industrial Classification (SIC)—and I therefore link measures of trade openness, technology, and capital-labour ratios from other sources at this industrial level and by year.

The trade data are from the International Trade Division of Statistics Canada. These data record total values of Canada's exports and imports for three digit SIC industries. However, given that some 80% of Canada's exports and some 70% of imports are to and from the United States, the data to a larger extent represent Canada-U.S. trade. To convert this information into a trade openness variable I add up the exports and imports for every industry and then divide the sum by the total output produced by that industry. Output for three digit SIC industries was obtained from CANSIM. Since trade data is not available for all industries the sample size is reduced quite significantly from a size of over 80,000 person-years to a size of 19,040 person-years.

The data on technology and capital-labour ratios was obtained from files maintained by the Micro-economic Analysis Division of Statistics Canada. The data contains information on the use of 22 separate technologies by establishments in the manufacturing sector. Moreover, the variables for labour supply and unemployment rate by worker types were obtained from the Labour Force Survey (LFS) data files and merged to the SLID data sample by year, sex, age and education groups.

3. Summary Statistics

Table 1 presents summary statistics for some of the key variables in the sample. It shows that real wages (in constant 1992 dollars) have declined for both educated and less educated workers over the four-year period. More noteworthy is the fact that the relative wages of educated to less educated workers have fallen by some four percentage points between 1993 and 1996. In Section 4 I argue that the values presented here will understate the correct level of relative wages if the increasing relative supply and decreasing relative unemployment rate of educated workers over the period are taken into account.

Information on the "years of schooling" reveals that between 1993 and 1996 the average years of schooling completed by both educated and less educated workers has remained essentially constant. This is also reflected in the values for "years of experience" for both types of workers since potential experience is defined as age minus six minus years of schooling. Job tenure decreased quite dramatically for both types of workers, particularly for educated workers.

It is important to note the relative labour supply and unemployment rates of more and less educated workers: the first is rising, the latter falling. In a simple demand and supply diagram the first pushes the relative wages of the educated workers down; the latter suggests that the sluggish demand for less-skilled workers corresponds with a quantity adjustment (that is, higher unemployment) rather than a price adjustment (lower wages). Both of these factors, therefore, imply that the relative real wage rate of educated workers would have been a lot higher in their

absence. In Section 4 I derive the relative wage of educated/less-educated workers in the absence of these two factors.

4. The Wage Premium for Higher Education

To see how educational earning differentials have evolved over the period covered by SLID, I calculate the wage premium for educated workers for each year.[1] Table 2 records the education premium first for all workers and then by gender and age (18 to 34, 35 to 44 and 45 to 64 years). The results are mixed. Overall the wage premium declined slightly by 0.25%. However, this masks declines of 2% for women and over 10% for the oldest group, as well as increases of 2% for men, and over 7% for 18 to 24 year olds. Men and the young are in fact more likely to be exposed to international competition due to trade.

It has been suggested that the two major reasons for a smaller rise in the wage premium to higher education in Canada relative to the United States are greater relative growth of educated workers and greater strength of Canadian unions in wage setting (Freeman and Needels, 1991; Murphy, Riddell and Romer, 1998). Table 3 shows that a marked increase in the relative supply of educated workers has indeed occurred between 1993 and 1996. The percentage increase in the relative supply of educated workers for all workers was 19%.

Murphy, Riddell and Romer (1998) find the wage elasticity of the relative labour supply of educated workers to be about 0.75 in Canada. That is, holding everything else fixed, if the relative labour force of educated workers goes up by 1% their relative wage rate falls by about 0.75%. Making use of their measure, in Table 4 I calculate the values by which the skill premium has been suppressed due to the relative labour force growth.[2] I then add these values to the corresponding skill premium values in Table 2 to get Table 5, which records what skill premium would have been in the absence of a relative supply growth of educated labour.

From Table 5 it is obvious that with the exception of workers aged 45 and older the skill premium has increased between 1993-1996 both for all workers as a whole and for every individual category. Furthermore, looking at Table 5 a few observations are in order. First, the increase in the skill premium is higher for men than for women: 3.1% versus 1.4%. Sectors exposed to trade liberalization are male dominated. If trade liberalization indeed does contribute to the rising skill premium then this is in the expected direction.

Second, the increase in the skill premium decreases with age from 10.2% for the youngest group, to 3.1%, and finally to –7.8% for the oldest. This perhaps is due to one of two phenomena: (1) it is the more recent vintages of education that drive the education premium up, and older educated workers do not benefit from this; (2) the older less-educated workers are more protected by their experience and seniority from a decline in their relative wages than their younger counterparts. Looking at the declining education premium of workers 45 and older it is even possible that for these workers, work experience (rather than education) is more and more recognized.

---

[1] The wage premium (in percentage) for workers type i over workers type j in year t is calculated as: $\frac{wage_t^i - wage_t^j}{wage_t^j} * 100$, where $wage_t^i$ is the real wage of workers type i in year t.

[2] For example between 1993 and 1994 relative supply of all educated workers increased by about 10% ((0.855-0.777)/0.777)*100. Multiplying that by 0.75 will give us the 7.53 skill premium suppressed due to a relative increase in supply.

Next I turn to investigating the second reason for a relatively milder increase in education premium in Canada: the impact of unionization on the wages of less educated workers. I measure the wage premium for non-unionized workers and then subtract similar measures for all workers given in Table 2. The results are presented in Table 6, and suggest that the skill premium between unionized and non-unionized workers narrowed. Unions don't suppress educated workers' wages, but rather help raise the wages of less-educated workers.

Although Table 6 reveals that unionization narrows the skilled/less-skilled wage gap quite significantly, it does not provide any evidence suggesting that unionization may also contribute toward restraining the rise in the skill premium. If that were true then the values recorded for each category should have been increasing over time, which is not the case. This result is in line with that found by Freeman and Needels (1991) examining the data from the Survey of Consumer Finance for 1976, 1980, 1987 and 1988 and the Census of Population for 1971, 1981 and 1986.

It can also be argued that the changes in skill premium recorded in Table 5 understate the market shifts against the less educated if changes in market conditions alter both their labour utilization and their rates of pay (Freeman and Needels, 1991). More specifically, we ask if the relatively smaller increases in skill premium in Canada were offset by a smaller less-educated to educated labour utilization differential. Table 7 records the percentages by which the less-educated unemployment rates exceed those of educated workers in order to address this question.

The evidence shows that the relative employment prospects of less-educated workers worsened over the period 1993-1996. It should be noted that the increase in the relative unemployment rates for male and younger less-educated workers was more dramatic: 17.2% for men, 29.9% and 13.3% for workers aged 18-24 and 25-44 respectively. As discussed above these are the categories of workers who are relatively more exposed to volatilities due to trade liberalization.

The evidence in Table 7 is consistent with the proposition that Canada has responded to the deteriorating job market for the less educated with a relatively greater quantity adjustment than with wage adjustment. Had price adjustment been the sole source of change the wage premium documented in Tables 2 and 5 would have been a lot higher (Freeman and Needels,1991).

The increase in wage differentials reported in Tables 2 to 5 could be due either to a leftward shift in relative supply or a rightward shift in relative demand of skilled workers, or some combination of both. Over the period the wage differential has widened, and relative supply actually shifted to the right, leaving the conclusion that the change in wage differential would have been higher in the absence of a relative supply change.

This suggests that the widening in the wage differential between education levels is most likely a result of a positive relative demand shift. In particular, this is portrayed by a rising share of educated workers in total employment for all workers, both sexes and all age groups in Table 8. Trade intensity is one of the factors that has the potential to shift relative demand in favour of educated workers.

5. Trade, Education, and Wages

Little research has been done on investigating the changes in skill premium in Canada. There is a consensus in the literature that there has been a positive shift in relative demand for skilled (or, educated) workers (Gera, Gu and Lin, 1999). The disagreement, nevertheless, surfaces when it comes to explaining the factors behind the positive demand shift.

The two most familiar explanations for a rightward shift in the relative demand for skilled workers in Canada are trade liberalization and a skilled-biased technological change, the latter being more popular than the former. To investigate the relative contribution of trade and technologies to changes in skilled/less-skilled wage differential we run the following semi-log multivariate regression:

$$\begin{aligned} W_i^t = {} & \alpha_1 + \beta_1(TRADE_j^t) + \beta_2(E*TRADE_j^t) + \pi_1(TECH_j) + \pi_2(E*TECH_j) \\ & + \eta(CAPITAL_j^t) + \theta(LS_k^t) + \mu(UNEMP_k^t) + \rho(TENURE_i^t) + \sigma(TENURE_i^t)^2 \\ & + \psi(EXP_i^t) + \xi(EXP_i^t)^2 + \delta(FT_i^t) + \upsilon(SEX_i) + \phi(UNION_i^t) + \tau_1(Y1994) \\ & + \tau_2(Y1995) + \tau_3(Y1996) \end{aligned} \qquad (1)$$

where W_i^t is the log of real wages for worker i in time t; E is a dummy variable that takes a value of 1 if an individual ever received a post-secondary degree, certificate or diploma, ranging from community college graduates to PhDs, and 0 otherwise (namely those without certification beyond High School). Since less-educated workers are the reference group, the coefficients on E and any continuous variable interacted with E measure the differential effect of being an educated worker relative to less-educated worker. $TRADE_j$ is the variable representing trade intensity by 3-digit SIC level (the subscript j represents industries) and is equal to total exports plus total imports divided by total output by industries. $E*TRADE_j$ is $TRADE_j$ interacted with E. $TECH_j$ is a technology variable for industry j. It is a dummy variable taking a value of 1 if an industry is technology-intensive and 0 otherwise. $CAPITAL_j^t$ is the physical capital intensity in industry j in time t.

The variable that represents technological intensity assigns a value of 1 to industries with an above average percentage of plants using any of the technologies and 0 otherwise. This also corresponds observation by observation to a dummy variable that assigns a value of 1 to industries that use any of the first four of six technology groups: Design and Engineering, Fabrication and Assembly, Inspection and Communications, Integration and Control, Automated Material Handling Systems and Manufacturing Information Systems.[3] Thus the technology variable can take either of the above definitions. LS_k^t is total labour force (in thousands) of groups of workers possessing characteristics k at time t, and is used as a proxy for the labour supply variable. $UNEMP_k^t$ is the unemployment rate in the economy of groups of workers possessing characteristics k at time t. $TENURE_i^t$ is on-the-job tenure in months of individual i in time t. EXP_i^t is potential experience in years in time t. FT_i^t and $UNION_i^t$ are dummy variables taking, respectively, a value of 1 if individual i is either full-time or unionized in year t, and 0

[3] See Baldwin and Rafiquzzaman (1998) for more detail on the types of technology that fall into the six groups. Design and Engineering, Fabrication and Assembly, Automated Material Handling Systems, Inspection and Communications, Manufacturing Information Systems, and Integration and Control.

otherwise. Similarly, SEX_i takes a value of 1 if an individual is male and 0 otherwise. *Y1994-Y1996* are dummy variables for each year to capture for trend (or business cycle) effects.

The least squares regression results are presented in Table 9. The variable *CAPITAL* is not included in the models depicted in the first two columns, whereas, in the latter two it is. The data for *CAPITAL* was not available for 1996, thus, the regressions that include this variable are run on fewer observations.

The coefficients on *TRADE* and *E*TRADE* are positive in all four regressions in both tables implying that trade has had a positive impact on real wages as a whole. This perhaps is due to trade putting pressure on domestic industries to become more competitive and therefore more productive, enhancing the marginal productivity of labour. Moreover, the significantly positive coefficients on *E*TRADE* support the hypothesis that trade widens the wage differential across education levels. According to the results in Table 9 a 1% increase in the trade-to-output ratio will widen the wage gap between more and less educated workers by about 2% to 3%. However, it is important to note that the widening of the educated to less-educated wage differential does not come at the expense of the less-educated workers as both workers benefit from trade. However, in relative terms the educated benefit more.

As expected the coefficients on technology (TECH1 and ETECH1 respectively) are quite significant for both education levels and its impact on the more educated is some three to four times higher than that on less-educated.[4] The magnitude of the impact of trade on the wages of the more educated as opposed to less-educated is in a similar range. This result is in line with that found by Baldwin and Rafiquzzaman (1998) but in sharp contrast to Gera, Gu and Lin (1999) who find that technology has a much more favourable effect on the relative wages than trade does.

Gera, Gu and Lin (1999) find strong evidence that advanced technologies are biased toward the use of skilled labour and thus conclude that skill-biased technological change perhaps is the most important factor in shifting the skilled labour relative demand curve to the right. Similarly, Baldwin and Rafiquzzaman (1998) find both trade and technology as contributing factors toward the widening wage differential phenomenon. As they put it:

> "The past twenty years have seen a change in earnings inequality, both in the United States and Canada. The debate over the causes of increasing inequality has focused on whether it is changes in trade patterns or whether it is technological change that is at fault. This paper has demonstrated that both are at work."

The coefficients on all other variables, with the exception of labour supply, are in the expected direction in all of the regressions. Looking at Table 9, they could be interpreted as following: holding everything else constant, an extra year of experience raises the real wage of all workers by about 2%; a month added to on-the-job tenure pushes the real wage up by 0.28%; a full-time job pays an hourly wage that is 11% higher than a comparable part-time job; on average men's wage is 27% higher than that of women; one percent increase in national unemployment rate

[4] Note the coefficients on TECH1 and ETECH1 in Table 9, column (1) are 0.05 and 0.12 respectively. Thus the impact of technology on the wages of the more educated is=0.12+0.05 and on the less-educated is 0.05 (since less-educated is the reference group). Thus the strength of technology on the relative wages of more educated is calculated as (0.12+0.05)/0.05=3.4.

suppresses real wage rates by 2.3%; unionized jobs pay 12% more than non-unionized; the coefficient on capital intensity, as expected, is positive.

The puzzling part, however, is the positive coefficient on the labour supply: an increase in labour supply of one million individuals pushes real wages up by about 2%. When the more and less educated were analyzed separately—in regressions not reported here— the positive effect of labour supply on the real wages of more educated workers was some 6.5 times stronger than that of less-educated. This perhaps supports some sort of Lucas type positive externality attached to the size of the skilled labour stock.[5] However, the positive coefficient on the less-educated labour supply is puzzling.

6. Conclusion

Developments in the relative wage rates of more and less educated during the early to mid-1990s are studied with particular attention being paid to the role of international trade. The widening of the gap between the wages of these groups occurred for workers in industries more likely to be exposed to international competition brought about by trade.

This wage differential would have been a lot higher in the absence of increases in the relative supply of educated workers and in the absence of quantity adjustment (increasing relative unemployment of less-educated workers) rather than price adjustment (wage changes). Trade is a significant contributor to the rising wage premium due to education, having an impact just as a great as that of technical change.

Often trade with developing countries is implicated as influencing the labour market of industrialized countries, particularly the relative wages of the more and less educated, with less educated workers standing to lose both absolutely and relatively. The results in this paper, however, challenge this conventional wisdom. The analysis is based on data emphasizing Canada-US trade flows, and suggest increased trade flows are a possible cause of the widening in educated/less-educated wage differential. International trade is not necessarily harmful for less educated workers. The real wages of both more and less educated workers go up in response to increased trade liberalization, but the more educated benefit relatively more than their counterparts.

[5] Lucas (1988) suggests that educated (or skilled) workers are more productive where there is a higher stock of educated (or skilled) labour. This is because educated workers exert positive externality on one another's knowledge (human capital) and hence productivity and wages.

References

Acemoglu, D. (1998). *Changes in unemployment and wage inequality: an alternative theory and some evidence,* NBER Working Paper Series 6658.

Baldwin, J. R. and M. Rafiquzzaman. (1998). *The effect of technology and trade on wage differentials between non-production and production workers in Canadian manufacturing,* Research Paper Series no. 98, Analytical Studies Branch, Statistics Canada.

_____ , T. Gray and J. Johnson. (1997). *Technology-induced wage premia in Canadian manufacturing plants during the 1980,* Research Paper Series no. 92, Analytical Studies Branch, Statistics Canada.

Berman, E., J. Bound and Z. Griliches. (1994). Changes in the demand for skilled labour within U.S. manufacturing industries: evidence from the annual survey of manufacturing, *Quarterly Journal of Economics*, 109: 367-97.

Bhagwati, J. (1995). *Trade and wages: a malign relationship?* Unpublished document.

_____ (1959). Protection, real wages and real incomes, *Economic Journal*, 69: 733-48.

_____ and V. H. Dehejia. (1994). Free trade and wages of the unskilled - is Marx striking again?. In Bhagwati, J. and Kosters, M.H. (eds.), *Trade and wages: Leveling wages down*? Washington, D.C.: AEI Press: 36-75.

Bound, J. and G. Johnson. (1992). Changes in the structure of wages during the 1980s: an evaluation of alternative explanation, *American Economic Review*, 82: 371-92.

Borjas, G. J., R. B. Freeman and L. F. Katz. (1992). On the labour market effects of immigration and trade. In G. B. Borjas and R. B. Freeman (eds.), *The Economic Effects of Immigration in Source and Receiving Countries*, Chicago University Press: Chicago, Illinois.

_____ and V. Ramey. (1994). Time-series evidence on the sources of wage inequality, *American Economic Review*, 84: 11-16.

Deardroff, A.V. and D.S. Hakura. (1994). Trade and Wages - What are the questions? In Bhagwati, J. and M.H. Kosters (eds.), *Trade and wages: Leveling wages down?*, Washington, D.C.: AEI Press: 76-107.

Findlay R. and H. Kierzkowski. (1983). International trade and human capital: a simple general equilibrium mode, *Journal of Political Economy*, 91:957-978.

_____ (1995). Wage dispersion, international trade and the services sector, in Findlay, R. ed. *Factor proportions, trade and growth*, MIT Press: 28-40.

Francois, J. F. and D. Nelson. (1998). Trade, technology, and wages: general equilibrium mechanics, *The Economic Journal*, 108: 1483-1499.

Freeman, R. and K. Needels. (1991). *Skill differentials in Canada in an era of rising labour market inequality,* NBER Working Paper Series: 3827.

Freeman, R. B. (1995). Are your wages set in Beijing? *Journal of Economic Perspectives*, 9: 15-32.

Galbraith J. K. and P. D. P. Calmon. (1996). Wage change and trade performance in US manufacturing industries, *Cambridge Journal of Economics*, 20: 433-450.

Gera, S., W. Gu and Z. Lin (1999). *Technology and the demand for skills: an industry-level Analysis*. Unpublished memo.

Greene, W. H. (1997). *Econometric Analysis*, Upper Saddle River, N.J., Prentice Hall.

Grossman, G.M. and E. Helpman. (1995). Technology and trade. In Grossman, G.M. and Rogoff, K. (eds.), *Handbook of International trade*, vol. III: 1279-1337.

Harrigan, J. (1998). *International trade and American wages in general equilibrium: 1967-1995*, NBER Working Paper Series 6609.

Hausman, J. A. and W. E. Taylor. (1981). Panel data and unobservable individual effects, *Econometrica*, 49: 1377-1398.

Johnston, J. and J. DiNardo. (1997). *Econometric Methods*, 4th ed. The McGraw-Hill Companies, Inc.

Katz, L. and K. M. Murphy. (1992). Changes in relative wages, 1963-1987: supply and demand factors, *Quarterly Journal of Economics*, 107: 35-78.

Lang, K. (1998). The effect of trade liberalization on wages and employment: the case of New-Zealand, *Journal of Labour Economics*, 16: 792-814

Lawrence, R. and M. Slaughter. (1993). *International trade and American wages in the 1980s: Giant sucking sound or small hiccup?* Brookings Papers on Economic Activity: Macroeconomics 2: 161-226.

Leamer, E. (1993). Wage effects of a U.S.-Mexican free trade agreement. In Garber, P.M. ed., *The Mexico-U.S. free trade agreement*, Cambridge and London: MIT Press: 57-127.

_____ (1995). International trade theory: the evidence. In Grossman, G.M. and Rogoff, K. (eds.), *Handbook of International trade*, vol. III: 1339-94.

Lucas, R. E. (1993). Making a miracle, *Econometrica*, 61: 251-272.

_____ (1988). On the mechanics of economic development, *Journal of Monetary Economics,* 22: 3-42.

McPherson, D. A. and J. B. Stewart. (1990). The effect of international competition on union and nonunion wages, *Industrial and Labour Relations Review*, 43: 435-446.

Matyas, L. and P. Sevestre. (1996). *The Econ[illegible]etrics of Panel Data: A handbook of the theory with applications*, Kluwer Academic Publishers, Dordrecht.

Morissette, R. (1995). *Why inequality in weekly earnings increased in Canada*, Research Paper Series no. 80, Analytical Studies Branch, Statistics Canada.

Murphy, K., Riddell, W. and P. Romer. (1998). *Wages, skill and technology in the United States and Canada*, NBER Working Paper Series: 6638.

Murphy, K.M and F. Welch. (1991). 'The Role of International Trade in Wage Differentials'. In Kosters, M.H., (ed.) *Workers and their wages: Changing patterns in the United States*. AEI Studies, no. 520, Washington, D.C.: AEI Press, pages 39-69.

Nye, W. W. (1996). Firm-specific learning-by-doing in semiconductor production: some evidence from the 1986 trade agreement, *Review of Industrial Organization*, 11: 383-394.

OECD. (1997). Trade, earnings and employment: assessing the impact of trade with emerging economics on OECD labour markets, *Employment Outlook*, OECD.

Ravenga, A. L. (1992). Exporting jobs? The impact of import competition on employment and wage in U.S. manufacturing, *Quarterly Journal of Economics*, 107: 255-284.

_____ (1997). Employment and wage effects of trade liberalization: the case of Mexican manufacturing, *Journal of Labour Economics*, 15: S20-S43.

Saeger, S. (1997). Globalisation and deindustrialisation: myth and reality in the OECD, *Weltwirtschaftliches Archiv*, 133: 579-608.

Slaughter, M. J. (1998). International trade and labour-market outcomes: results, questions and policy, *The Economic Journal*, 108: 1452-1462.

Wood, A. (1998). Globalisation and the rise in labour market inequalities, *The Economic Journal*, 108: 1463-1482.

_____ (1995). How trade hurt unskilled workers, *Journal of Economic Perspectives*, Summer: 57-80.

Table 1: Descriptive statistics of educated/less-educated workers

Variables		1993	1994	1995	1996
real wage rate	□ educated	19.13	18.72	18.46	18.26
		(0.18)	(0.17)	(0.18)	(0.12)
	□ less-educated	12.25	12.11	12.05	12.01
		(0.05)	(0.05)	(0.05)	(0.04)
	educated/less-educated	1.561	1.546	1.532	1.521
Years of schooling	□ educated	17.5	17.5	17.6	17.6
		(0.05)	(0.04)	(0.04)	(0.03)
	□ less-educated	12.1	12.3	12.4	12.6
		(0.02)	(0.02)	(0.02)	(0.02)
	educated/less-educated	1.43	1.42	1.41	1.40
Years of experience	□ educated	13.3	12.7	12.8	12.5
		(0.23)	(0.23)	(0.23)	(0.141)
	□ less-educated	12.6	12.3	12.3	12.5
		(0.09)	(0.10)	(0.23)	(0.06)
	educated/less-educated	1.06	1.03	1.04	1.00
job tenure (years)	□ educated	9.8	8.3	7.63	7.0
		(0.82)	(2.08)	(2.06)	(1.28)
	□ less-educated	6.8	6.0	5.65	5.5
		(0.82)	(0.79)	(0.79)	(0.52)
	educated/less-educated	1.44	1.38	1.35	1.26
Labour supply (thousands)	□ educated	6,400	6,800	7,100	7,300
		(12.33)	(12.79)	(13.32)	(8.59)
	□ less-educated	8,200	8,000	7,900	7,900
		(6.88)	(7.29)	(7.90)	(5.40)
	educated/less-educated	0.78	0.86	0.90	0.93
Unemployment rate (percentage)	□ educated	8.1	7.6	6.8	7.1
		(0.04)	(0.03)	(0.03)	(0.02)
	□ less-educated	13.7	12.8	11.9	12.5
		(0.03)	(0.03)	(0.03)	(0.02)
	educated/less-educated	0.59	0.60	0.57	0.57
Full time/ part-time ratio		4.0	4.0	3.7	3.3
Unionization rate (percentage)	□ educated	46.0	45.0	43.0	40.0
	□ less-educated	30.0	28.0	28.0	27.0
	educated/less-educated	1.5	1.6	1.5	1.5
No. of observations	All	16734	16977	15982	36,297
	□ male	8749	8853	8196	18522
	□ female	7985	8124	7786	18270
	□educated	2262	2391	2327	5686
	□ less-educated	14472	14586	13655	30611

Standard errors in parenthesis.
Source: author's weighted calculation from the SLID.

Table 2: Education premium (in percentage)

				Age Groups		
	All workers	Male	Female	18 - 24	25 - 45	45+
1993	51.2	47.4	57.1	42.8	44.3	59.6
1994	47.2	43.6	52.8	36.2	43.4	59.6
1995	51.7	50.6	54.0	46.9	47.0	53.8
1996	51.0	49.9	55.1	49.9	45.5	49.3
Percentage change 1996 - 1993	-0.25	1.57	-2.0	7.1	1.288	-10.3

Source: author's calculation from the SLID data.

Table 3: Relative supply of educated workers

				Age Groups		
	All workers	Male	Female	18- 24	25 - 45	45+
1993	0.78	0.76	0.80	0.32	1.02	0.73
1994	0.86	0.83	0.89	0.32	1.12	0.85
1995	0.90	0.87	0.94	0.34	1.18	0.89
1996	0.93	0.88	0.98	0.35	1.21	0.92
Percentage change 1996 - 1993	19.0	16.0	22.7	9.1	18.6	24.8

Source: author's calculation from the Labour Force Survey.

Table 4: Skill premium suppressed by relative labour force growth (in percentage)

	All workers	Male	Female	18- 24	25 - 45	45+
1994	7.5	6.7	8.6	1.0	7.2	11.9
1995	3.6	3.4	3.9	2.4	4.2	3.2
1996	2.4	1.5	3.4	3.1	1.9	2.5

Source: author's calculation from Table 3 and the measure of elasticity of the relative labour supply of educated workers of 0.75 found by Murphy, Riddell and Romer (1998).

Table 5: Skill premium adjusted for the relative supply growth (in percentage)

				Age Groups		
	All workers	Male	Female	18- 24	25 - 45	45+
1993	51.2	47.4	57.1	42.8	44.3	59.6
1994	54.7	50.3	61.4	37.3	50.6	71.5
1995	55.3	53.9	57.9	49.3	51.2	57.0
1996	53.3	50.5	58.5	52.9	47.3	51.8
Percentage change 1996 - 1993	2.1	3.1	1.4	10.2	3.1	-7.8

Source: author's calculation from Table 2 and 4.

Table 6: Wage premium suppressed due to unionization (in percentage)

				Age Groups		
	All workers	Male	Female	18- 24	25 - 45	45+
1993	31.6	33.9	13.6	10.5	22.4	33.4
1994	27.4	35.7	5.0	6.0	19.3	36.3
1995	32.7	40.6	7.2	5.8	26.3	27.4
1996	28.8	36.2	7.3	3.0	25.5	15.0

Source: author's calculation from the SLID data.

Table 7: Percentages by which less-educated unemployment rate exceeds that of educated

				Age Groups		
	All workers	Male	Female	18- 24	25 - 45	45+
1993	86.5	85.4	85.7	68.9	90.9	67.4
1994	84.9	85.2	85.8	87.5	90.6	53.7
1995	94.5	99.5	87.8	95.4	103	54.4
1996	90.5	100	78.3	89.5	103	50.4
Percentage change 1996 - 1993	4.7	17.2	-8.7	30.0	13.3	-25.1

Source: author's calculations from LFS and SLID surveys.

Table 8: Share of skilled (educated) workers in total employment

				Age Groups		
	All workers	Male	Female	18- 24	25 - 45	45+
1993	0.45	0.45	0.46	0.26	0.52	0.43
1994	0.48	0.47	0.48	0.26	0.54	0.47
1995	0.49	0.48	0.50	0.27	0.55	0.48
1996	0.49	0.48	0.51	0.27	0.56	0.48
Percentage change 1996 - 1993	9.1	8.0	10.5	6.2	8.1	11.8

Source: author's calculations from the Labour Force survey.

Table 9: Least squares regression results with first tyoe technology.

	(1) Ordinary Least Squares Estimates	(2) Maximum Likelihood Estimates	(3) Ordinary Least Squares Estimates	(4) Maximum Likelihood Estimates
Intercept	2.02	2.056	1.99	2.03
	(98.9)	(98.3)	(73.7)	(73.4)
TRADE	0.00775	0.00979	0.00446	0.00544
	(5.71)	(5.44)	(2.29)	(2.07)
ETRADE	0.0305	0.0226	0.0276	0.0202
	(8.24)	(6.68)	(5.77)	(4.61)
TECH1	0.0535	0.0647	0.0599	0.0701
	(6.51)	(5.83)	(5.65)	(4.87)
ETECH1	0.126	0.149	0.113	0.133
	(4.68)	(5.95)	(3.23)	(4.08)
EXP	0.0189	0.0189	0.0204	0.0199
	(18.4)	(19.3)	(15.1)	(15.5)
EXP^2	-0.000331	-0.000324	-0.000347	-0.000339
	(-17.3)	(-17.9)	(-13.9)	(-14.3)
TENURE	0.00289	0.00259	0.00288	0.00259
	(35.6)	(33.3)	(27.8)	(26.1)
$TENURE^2$	-0.00000457	-0.00000405	-0.00000456	-0.00000401
	(-20.4)	(-19.4)	(-16.2)	(-15.3)
FT	0.111	0.104	0.111	0.0931
	(10.4)	(10.3)	(7.73)	(6.86)
LS	0.0000205	0.0000184	0.0000192	0.0000161
	(4.88)	(4.68)	(3.4)	(3.07)
SEX	0.268	0.228	0.265	0.231
	(42.7)	(37.3)	(32.2)	(28.8)
UNEMP	-0.0236	-0.0214	-0.0233	-0.0210
	(-27.5)	(-26.1)	(-21.1)	(-20.0)
UNIION	0.129	0.0953	0.122	0.0930
	(20.3)	(15.1)	(14.7)	(11.4)
Y1994	0.00370	0.00284	0.00628	0.00612
	(0.42)	(0.23)	(0.72)	(0.49)
Y1995	-0.00846	-0.00920	-0.00458	-0.00443
	(-0.94)	(-0.73)	(-0.51)	(-0.35)
Y1996	-0.0171	-0.0174	--------	-------
	(-2.23)	(-1.63)		
CAPITAL	-------	--------	0.00806	0.0116
			(1.91)	(2.02)
Rsq	0.437	0.367	0.441	0.370
Durbin-Wat	1.40	2.10	1.36	2.103
No of obs	19,040	19,039	11,050	11,049

t-ratios in parenthesis.

ANALYTICAL STUDIES BRANCH RESEARCH PAPER SERIES

No. 1 *Behavioural Response in the Context of Socio-Economic Microanalytic Simulation,* **Lars Osberg** **(April 1986)**

No. 2 *Unemployment and Training,* **Garnett Picot** **(1987)**

No. 3 *Homemaker Pensions and Lifetime Redistribution,* **Michael Wolfson** **(August 1987)**

No. 4 *Modeling the Lifetime Employment Patterns of Canadians,* **Garnett Picot** **(Winter 1986)**

No. 5 *Job Loss and Labour Market Adjustment in the Canadian Economy,* **Garnett Picot and Ted Wannell** **(1987)**

No. 6 *A System of Health Statistics: Toward a New Conceptual Framework for Integrating Health Data,* **Michael C. Wolfson** **(March 1990)**

No. 7 *A Prototype Micro-Macro Link for the Canadian Household Sector,* **Hans J. Adler and Michael C. Wolfson** **(August 1987)**

No. 8 *Notes on Corporate Concentration and Canada's Income Tax,* **Michael C. Wolfson** **(October 1987)**

No. 9 *The Expanding Middle: Some Canadian Evidence on the Deskilling Debate,* **John Myles** **(Fall 1987)**

No. 10 *The Rise of the Conglomerate Economy,* **Jorge Niosi** **(1987)**

No. 11 *Energy Analysis of Canadian External Trade: 1971 and 1976,* **K.E. Hamilton** **(1988)**

No. 12 *Net and Gross Rates of Land Concentration,* **Ray D. Bollman and Philip Ehrensaft** **(1988)**

No. 13 *Cause-Deleted Life Tables for Canada (1972 to 1981): An Approach Towards Analyzing Epidemiological Transition,* **Dhruva Nagnur and Michael Nagrodski** **(November 1987)**

No. 14 *The Distribution of the Frequency of Occurrence of Nucleotide Subsequences, Based on Their Overlap Capability,* **Jane F. Gentleman and Ronald C. Mullin** **(1988)**

No. 15 *Immigration and the Ethnolinguistic Character of Canada and Quebec,* **Réjean Lachapelle** **(1988)**

No. 16 *Integration of Canadian Farm and Off-Farm Markets and the Off-Farm Work of Women, Men and Children,* **Ray D. Bollman and Pamela Smith** **(1988)**

No. 17 *Wages and Jobs in the 1980s: Changing Youth Wages and the Declining Middle,* **J. Myles, G. Picot and T. Wannell** **(July 1988)**

No. 18 *A Profile of Farmers with Computers,* **Ray D. Bollman** **(September 1988)**

No. 19 *Mortality Risk Distributions: A Life Table Analysis,* **Geoff Rowe** **(July 1988)**

No. 20 *Industrial Classification in the Canadian Census of Manufactures: Automated Verification Using Product Data,* **John S. Crysdale** **(January 1989)**

No. 21 *Consumption, Income and Retirement,* **A.L. Robb and J.B. Burbridge** **(1989)**

No. 22 *Job Turnover in Canada's Manufacturing Sector,* ***John R. Baldwin and Paul K. Gorecki (Summer 1989)***

No. 23 *Series on The Dynamics of the Competitive Process,* ***John R. Baldwin and Paul K. Gorecki (1990)***

A. *Firm Entry and Exit Within the Canadian Manufacturing Sector.*
B. *Intra-Industry Mobility in the Canadian Manufacturing Sector.*
C. *Measuring Entry and Exit in Canadian Manufacturing: Methodology.*
D. *The Contribution of the Competitive Process to Productivity Growth: The Role of Firm and Plant Turnover.*
E. *Mergers and the Competitive Process.*
F. *n/a*
G. *Concentration Statistics as Predictors of the Intensity of Competition.*
H. *The Relationship Between Mobility and Concentration for the Canadian Manufacturing Sector.*

No. 24 *Mainframe SAS Enhancements in Support of Exploratory Data Analysis,* ***Richard Johnson, Jane F. Gentleman and Monica Tomiak (1989)***

No. 25 *Dimensions of Labour Market Change in Canada: Intersectoral Shifts, Job and Worker Turnover,* ***John R. Baldwin and Paul K. Gorecki (1989)***

No. 26 *The Persistent Gap: Exploring the Earnings Differential Between Recent Male and Female Postsecondary Graduates,* ***Ted Wannell (1989)***

No. 27 *Estimating Agricultural Soil Erosion Losses From Census of Agriculture Crop Coverage Data,* ***Douglas F. Trant (1989)***

No. 28 *Good Jobs/Bad Jobs and the Declining Middle: 1967-1986,* ***Garnett Picot, John Myles, Ted Wannel (1990)***

No. 29 *Longitudinal Career Data for Selected Cohorts of Men and Women in the Public Service, 1978-1987,* ***Garnett Picot and Ted Wannell (1990)***

No. 30 *Earnings and Death-Effects Over a Quarter Century,* ***Michael Wolfson, Geoff Rowe, Jane F. Gentleman and Monica Tomiak (1990)***

No. 31 *Firm Response to Price Uncertainty: Tripartite Stabilization and the Western Canadian Cattle Industry,* ***Theodore M. Horbulyk (1990)***

No. 32 *Smoothing Procedures for Simulated Longitudinal Microdata,* ***Jane F. Gentleman,Dale Robertson and Monica Tomiak (1990)***

No. 33 *Patterns of Canadian Foreign Direct Investment Abroad,* ***Paul K. Gorecki (1990)***

No. 34 *POHEM - A New Approach to the Estimation of Health Status Adjusted Life Expectancy,* ***Michael C. Wolfson (1991)***

No. 35 *Canadian Jobs and Firm Size: Do Smaller Firms Pay Less?,* ***René Morissette (1991)***

No. 36 *Distinguishing Characteristics of Foreign High Technology Acquisitions in Canada's Manufacturing Sector,* ***John R. Baldwin and Paul K. Gorecki (1991)***

No. 37 *Industry Efficiency and Plant Turnover in the Canadian Manufacturing Sector,* ***John R. Baldwin (1991)***

No. 38 *When the Baby Boom Grows Old: Impacts on Canada's Public Sector,* **Brian B. Murphy and Michael C. Wolfson** *(1991)*

No. 39 *Trends in the Distribution of Employment by Employer Size: Recent Canadian Evidence,* **Ted Wannell** *(1991)*

No. 40 *Small Communities in Atlantic Canada: Their Industrial Structure and Labour Market Conditions in the Early 1980s,* **Garnett Picot and John Heath** *(1991)*

No. 41 *The Distribution of Federal/Provincial Taxes and Transfers in Rural Canada,* **Brian B. Murphy** *(1991)*

No. 42 *Foreign Multinational Enterprises and Merger Activity in Canada,* **John Baldwin and Richard Caves** *(1992)*

No. 43 *Repeat Users of the Unemployment Insurance Program,* **Miles Corak** *(1992)*

No. 44 *POHEM -- A Framework for Understanding and Modeling the Health of Human Populations,* **Michael C. Wolfson** *(1992)*

No. 45 *A Review of Models of Population Health Expectancy: A Micro-Simulation Perspective,* **Michael C. Wolfson and Kenneth G. Manton** *(1992)*

No. 46 *Career Earnings and Death: A Longitudinal Analysis of Older Canadian Men,* **Michael C. Wolfson, Geoff Rowe, Jane Gentleman and Monica Tomiak** *(1992)*

No. 47 *Longitudinal Patterns in the Duration of Unemployment Insurance Claims in Canada,* **Miles Corak** *(1992)*

No. 48 *The Dynamics of Firm Turnover and the Competitive Process,* **John Baldwin** *(1992)*

No. 49 *Development of Longitudinal Panel Data from Business Registers: Canadian Experience,* **John Baldwin, Richard Dupuy and William Penner** *(1992)*

No. 50 *The Calculation of Health-Adjusted Life Expectancy for a Canadian Province Using a Multi-Attribute Utility Function: A First Attempt,* **J.-M. Berthelot, R. Roberge and M.C. Wolfson** *(1992)*

No. 51 *Testing the Robustness of Entry Barriers,* **J.R. Baldwin and M. Rafiquzzaman** *(1993)*

No. 52 *Canada's Multinationals: Their Characteristics and Determinants,* **Paul K. Gorecki** *(1992)*

No. 53 *The Persistence of Unemployment: How Important were Regional Extended Unemployment Insurance Benefits?,* **Miles Corak, Stephen Jones** *(1993)*

No. 54 *Cyclical Variation in the Duration of Unemployment Spells,* **Miles Corak** *(1992)*

No. 55 *Permanent Layoffs and Displaced Workers: Cyclical Sensitivity, Concentration, and Experience Following the Layoff,* **Garnett Picot and Wendy Pyper** *(1993)*

No. 56 *The Duration of Unemployment During Boom and Bust,* **Miles Corak** *(1993)*

No. 57 *Getting a New Job in 1989-90 in Canada,* **René Morissette** *(1993)*

No. 58 *Linking Survey and Administrative Data to Study Determinants of Health,* **P. David, J.-M. Berthelot and C. Mustard** *(1993)*

No. 59 *Extending Historical Comparability in Industrial Classification,* **John S. Crysdale** *(1993)*

No. 60 *What is Happening to Earnings Inequality in Canada?,* **R. Morissette, J. Myles and G. Picot** *(June 1994)*

No. 61 *Structural Change in the Canadian Manufacturing Sector, (1970-1990),* **J. Baldwin and M. Rafiquzzaman (July 1994)**

No. 62 *Unemployment Insurance, Work Disincentives, and the Canadian Labour Market: An Overview,* **Miles Corak (January 1994)**

No. 63 *Recent Youth Labour Market Experiences in Canada,* **Gordon Betcherman and René Morissette (July 1994)**

No. 64 *A Comparison of Job Creation and Job Destruction in Canada and the United States,* **John Baldwin, Timothy Dunne and John Haltiwanger (July 1994)**

No. 65 *What is Happening to Weekly Hours Worked in Canada?,* **René Morissette and Deborah Sunter (June 1994)**

No. 66 *Divergent Inequalities -- Theory, Empirical Results and Prescriptions,* **Michael C. Wolfson (May 1995)**

No. 67 *XEcon: An Experimental / Evolutionary Model of Economic Growth,* **Michael C. Wolfson (June 1995)**

No. 68 *The Gender Earnings Gap Among Recent Postsecondary Graduates, 1984-92,* **Ted Wannell and Nathalie Caron (November 1994)**

No. 69 *A Look at Employment-Equity Groups Among Recent Postsecondary Graduates: Visible Minorities, Aboriginal Peoples and the Activity Limited,* **Ted Wannell and Nathalie Caron (November 1994)**

No. 70 *Employment Generation by Small Producers in the Canadian Manufacturing Sector,* **John R. Baldwin and Garnett Picot (November 1994)**

No. 71 *Have Small Firms Created a Disproportionate Share of New Jobs in Canada? A Reassessment of the Facts,* **Garnett Picot, John Baldwin and Richard Dupuy (November 1994)**

No. 72 *Selection Versus Evolutionary Adaptation: Learning and Post-Entry Performance,* **J. Baldwin and M. Rafiquzzaman (May 1995)**

No. 73 *Business Strategies in Innovative and Non-Innovative Firms in Canada,* **J. Baldwin and J. Johnson (February 1995)**

No. 74 *Human Capital Development and Innovation: The Case of Training in Small and Medium Sized-Firms,* **J. Baldwin and J. Johnson (March 1995)**

No. 75 *Technology Use and Industrial Transformation: Emprirical Perspectives,* **John Baldwin, Brent Diverty and David Sabourin (August 1995)**

No. 76 *Innovation: The Key to Success in Small Firms,* **John R. Baldwin (February 1995)**

No. 77 *The Missing Link: Data on the Demand side of Labour Markets,* **Lars Osberg (April 1995)**

No. 78 *Restructuring in the Canadian Manufacturing Sector from 1970 to 1990: Industry and Regional Dimensions of Job Turnover,* **J. Baldwin and M. Rafiquzzaman (July 1995)**

No. 79 *Human Capital and the Use of Time,* **Frank Jones (June 1995)**

No. 80 *Why Has Inequality in Weekly Earnings Increased in Canada?,* **René Morissette (July 1995)**

No. 81 *Socio-Economic Statistics and Public Policy: A New Role For Microsimulation Modeling,* **Michael C. Wolfson (July 1995)**

No. 82 *Social Transfers, Changing Family Structure, and Low Income Among Children,* **Garnett Picot and John Myles (September 1995)**

No. 83 *Alternative Measures of the Average Duration of Unemployment,* **Miles Corak and Andrew Heisz (October 1995)**

No. 84 *The Duration of Unemployment: A User Guide,* **Miles Corak and Andrew Heisz (December 1995)**

No. 85 *Advanced Technology Use in Manufacturing Establishments,* **John R. Baldwin and Brent Diverty (November 1995)**

No. 86 *Technology Use, Training and Plant-Specific Knowledge in Manufacturing Establishments,* **John R. Baldwin, Tara Gray and Joanne Johnson (December 1995)**

No. 87 *Productivity Growth, Plant Turnover and Restructuring in the Canadian Manufacturin Sector,* **John R. Baldwin (November 1995)**

No. 88 *Were Small Producers the Engines of Growth in the Canadian Manufacturing Sector in the 1980s?,* **John R. Baldwin (October 1996)**

No. 89 *The Intergenerational Income Mobility of Canadian Men,* **Miles Corak and Andrew Heisz (January 1996)**

No. 90 *The Evolution of Payroll Taxes in Canada: 1961 - 1993,* **Zhengxi Lin, Garnett Picot and Charles Beach (February 1996)**

No. 91 *Project on Matching Census 1986 Database and Manitoba Health Care Files: Private Households Component,* **Christian Houle, Jean-Marie Berthelot, Pierre David, Cam Mustard, L. Roos and M.C. Wolfson (March 1996)**

No. 92 *Technology-induced Wage Premia in Canadian Manufacturing Plants during the 1980s,* **John Baldwin, Tara Gray and Joanne Johnson (December 1996)**

No. 93 *Job Creation by Company Size Class: Concentration and Persistence of Job Gains and Losses in Canadian Companies,* **Garnett Picot and Richard Dupuy (April 1996)**

No. 94 *Longitudinal Aspects of Earnings Inequality in Canada,* **René Morissette and Charles Bérubé (July 1996)**

No. 95 *Changes in Job Tenure and Job Stability in Canada,* **Andrew Heisz (November 1996)**

No. 96 *Are Canadians More Likely to Lose Their Jobs in the 1990s?,* **Garnett Picot and Zhengxi Lin (August 6, 1997)**

No. 97 *Unemployment in the Stock and Flow,* **Michael Baker, Miles Corak and Andrew Heisz (September 1996)**

No. 98 *The Effect of Technology and Trade on Wage Differentials Between Nonproduction and Production Workers in Canadian Manufacturing,* **John R. Baldwin and Mohammed Rafiquzzaman (May 1998)**

No. 99 *Use of POHEM to Estimate Direct Medical Costs of Current Practice and New Treatments Associated with Lung Cancer in Canada,* **C. Houle, B.P. Will, J.-M. Berthelot, Dr. W.K. Evans (May 1997)**

No. 100 *An Experimental Canadian Survey That Links Workplace Practices and Employee Outcomes: Why it is Needed and How it Works,* **Garnett Picot, Ted Wannell (May 1997)**

No. 101 *Innovative Activity in Canadian Food Processing Establishments: The Importance of Engineering Practices,* **John Baldwin and David Sabourin (November 1999)**

No. 102 *Differences in Strategies and Performances of Different Types of Innovators,* **John R. Baldwin and Joanne Johnson (December 1997)**

No. 103 *Permanent Layoffs in Canada: Overview and Longitudinal Analysis,* **Garnett Picot, Zhengxi Lin and Wendy Pyper (September, 1997)**

No. 104 *Working More? Working Less? What do Canadian Workers Prefer?,* **Marie Drolet and René Morissette (May 20, 1997)**

No. 105 *Growth of Advanced Technology Use in Canadian Manufacturing During the 1990's,* **by John Baldwin, Ed Rama and David Sabourin (December 14, 1999)**

No. 106 *Job Turnover and Labour Market Adjustment in Ontario from 1978 to 1993,* **by Zhengxi Lin and Wendy Pyper (1997)**

No. 107 *The Importance of Research and Development for Innovation in Small and Large Canadian Manufacturing Firms,* **John R. Baldwin (September 24, 1997)**

No. 108 *International Competition and Industrial Performance: Allocative Efficiency, Productive Efficiency, and Turbulence,* **John R. Baldwin and Richard E. Caves (October 1997)**

No. 109 *The Dimensions of Wage Inequality among Aboriginal Peoples,* **Rachel Bernier (December 1997)**

No. 110 *Trickling Down or Fizzling Out? Economic Performance, Transfers, Inequality and Low Income,* **Myles Zyblock and Zhengxi Lin (December 10, 1997)**

No. 111 *Corporate Financial Leverage: A Canada - U.S. Comparison, 1961-1996,* **Myles Zyblock (December 1997)**

No. 112 *An explanation of the Increasing Age Premium,* **Constantine Kapsalis (July 1998)**

No. 113 *The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence from Longitudinal Income Tax Data,* **Miles Corak and Andrew Heisz (October, 1998)**

No. 114 *Foreign-Born vs Native-Born Canadians: A Comparison of Their Inter-Provincial Labour Mobility,* **Zhengxi Lin (September 1998)**

No. 115 *Living Arrangements and Residential Overcrowding: the situation of older immigrants in Canada, 1991,* **K.G. Basavarajappa (September 1998)**

No. 116 *What is Happening to Earnings Inequality and Youth Wages in the 1990s?,* **Garnett Picot (July 1998)**

No. 117 *The Determinants of the Adoption Lag for Advanced Manufacturing Technologies,* **John R. Baldwin and Mohammed Rafiquzzaman (August 1998)**

No. 118 *Labour Productivity Differences Between Domestic and Foreign-Controlled Establishments in the Canadian Manufacturing Sector,* **John R. Baldwin and Naginder Dhaliwal (March 1, 2000)**

No. 119 *Technology Adoption: A Comparison Between Canada and the United States,* **John R. Baldwin and David Sabourin (August 1998)**

No. 120 *Are There High-Tech Industries or Only High-Tech Firms? Evidence From New Technology-Based firms,* **John R. Baldwin and Guy Gellatly (December 1998)**

No. 121 *A Portrait of Entrants and Exits,* **John R. Baldwin (June 1999)**

No. 122 *Determinants of Innovative Activity in Canadian Manufacturing Firms: The Role of Intellectual Property Right,* **John R. Baldwin, Petr Hanel and David Sabourin (March 7, 2000)**

No. 123 *Innovation and Training in New Firms* **John R. Baldwin (November 2000)**

No. 124 *New Views on Inequality Trends in Canada and the United States,* **Michael C. Wolfson and Brian B. Murphy (August 1998 and October 1999 (paper)**

No. 125 *Employment Insurance in Canada: Recent Trends and Policy Changes,* **Zhengxi Lin (September 1998)**

No. 126 *Computers, Fax Machines and Wages in Canada: What Really Matters?,* **René Morissette and Marie Drolet (October 1998)**

No. 127 *Understanding the Innovation Process: Innovation in Dynamic Service Industries,* **Guy Gellatly and Valerie Peters (December 1999)**

No. 128 *Recent Canadian Evidence on Job Quality by Firm Size,* **Marie Drolet and René Morissette (November 1998)**

No. 129 *Distribution, Inequality and Concentration of Income Among Older Immigrants in Canada, 1990 ,* **K.G. Basavarajappa (April 1999)**

No. 130 *Earnings Dynamics and Inequality among Canadian Men, 1976-1992: Evidence from Longitudinal Income Tax Records,* **Michael Baker and Gary Solon (February 1999)**

No. 131 *The Returns to Education, and the Increasing Wage Gap Between Younger and Older Workers,* **C. Kapsalis, R. Morissette and G. Picot (March 1999)**

No. 132 *Why Do Children Move Into and Out of Low Income: Changing Labour Market Conditions or Marriage and Divorce?,* **G. Picot, M. Zyblock and W. Pyper (March 1999)**

No. 133 *Rising Self-Employment in the Midst of High Unemployment: An Empirical Analysis of Recent Developments in Canada,* **Zhengxi Lin, Janice Yates and Garnett Picot (March 1999)**

No. 134 *The Entry and Exit Dynamics of Self-Employment in Canada,* **Zhengxi Lin, Garnett Picot and Janice Yates (March 1999)**

No. 135 *Death and Divorce: The Long-term Consequences of Parental Loss on Adolescents,* **Miles Corak (June 9, 1999)**

No. 136 *In progress* **(Frank Jones)**

No. 137 *Innovation, Training and Success,* **John Baldwin (October 1999)**

No. 138 *The Evolution of Pension Coverage of Young and Older Workers in Canada,* **René Morissette and Marie Drolet (December 1999)**

No. 139 *Import Competition and Market Power: Canadian Evidence,* **Aileen J. Thompson (April 2000)**

No. 140 *Gender Composition and Wages: Why is Canada Different from the United States,* **Michael Baker and Nicole Fortin (August 2000)**

No. 141 *The Transition to Work for Canaddian University Graduates: Time to First Job, 1982-1990,* **Julian Betts, Christopher Ferrall and Ross Finnie (December 2000)**

No. 142 *Who Moves?. A Panel Logit Model Analysis of Interprovincial Migration in Canada,* **Ross Finnie (August 2000)**

No. 143 *Differences in Innovator and Non-Innovator Profiles: Small Establishments in Business Services,* **Guy Gellatly (December 1999)**

No. 144 *Social Transfers, Earnings and Low-Income Intensity Among Canadian Children, 1981-1996: Highlighting Recent Development in Low-Income Measurement,* **John Myles and Garnett Picot (March 2000)**

No. 145 *How Much of Canada's Unemployment is Structural?,* **Lars Osberg and Zhengxi Lin (October 2000)**

No. 146 *To What Extent Are Canadians Exposed to Low-Income?,* **René Morissette and Marie Drolet (April, 2000)**

No. 147 *The Maturation of Canada's Retirement Income System: Income Levels, Income Inequality and Low-Income among the Elderly,* **John Myles (March 6, 2000)**

No. 148 *The Performance of the 1990s Canadian Labour Market,* **Garnett Picot and Andrew Heisz (April, 2000)**

No. 149 *Payroll Taxes in Canada Revisited: Structure, Statutory Parameters, and Recent Trends* **Zhengxi Lin (December 2000)**

No. 150 *Patterns of Corporate Diversification in Canada: An Empirical Analysis,* **John R. Baldwin, Desmond Beckstead,Guy Gellatly and Alice Peters (June, 2000)**

No. 151 *Multinationals and the Canadian Innovation Process,* **John R. Baldwin and Petr Hanel (June, 2000)**

No. 152 *Rural Youth: Stayers, Leavers and Return Migrants,* **Richard Dupuy, Francine Mayer and René Morissette (September 5, 2000)**

No. 153 *Female Employment Rates and Labour Market Attachment in Rural Canada,* **Euan Phimster, Esperanza Vera Toscano, Alfons Weersink (December 2000)**

No. 154 *Training as a Human Resource Strategy: The Response to Staff Shortages and Technological Change,* **John R. Baldwin and Valerie Peters (Forthcoming)**

No. 155 *Job Tenure, Worker Mobility and the Youth Labour Market during the 1990s,* **G. Picot, A. Heisz and A. Nakamura(December 2000)**

No. 156 *The Impact of International Trade on the Wages of Canadians,* **Omar Zakhilwal (December 2000)**

No. 157 *The Persistent Gap: New Evidence on the Canadian Gender Wage Gap,* **Marie Drolet (December 2000)**

No. 158 *In Search of Intergenerational Credit Constraints Among Canadian Men: Quantile Versus Mean Regression Tests for Binding Crefdit Constraints,* **Nathan D. Grawe (December 2000)**

No. 159 *Intergenerational Influences on the Receipt of Unemployment Insurance in Canada and Sweden,* **Miles Corak, Bjorn Gustaffson and Torun Osterberg (December 2000)**

No. 160 *Neighbourhood Inequality in Canadian Cities,* **John Myles, Garnett Picot and Wendy Pyper (December 12, 2000)**


What if...
WHAT IF there were a place that could save you and your business time and money by offering a consolidated area with the latest in Canadian statistics?
WHAT IF there were a place that offered accessible and reliable data on an assortment of current hot topics on Canadian social and economic themes?
WHAT IF there were a place where analysis experts that know your markets could provide you with advice and customized data at your fingertips?
WHAT IF there were such a place?
THERE IS SUCH A PLACE.
www.statcan.ca
BUILT FOR BUSINESS
The official source of Canadian statistics
All the time — All in one place
729MISC99188-B